Beyond ENERGY STAR®: DOE's SSL Commercialization Support Strategy

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U.S. Department of Energy

ENERGY STAR Lighting Partner Meeting

San Antonio, Texas

March 18, 2009

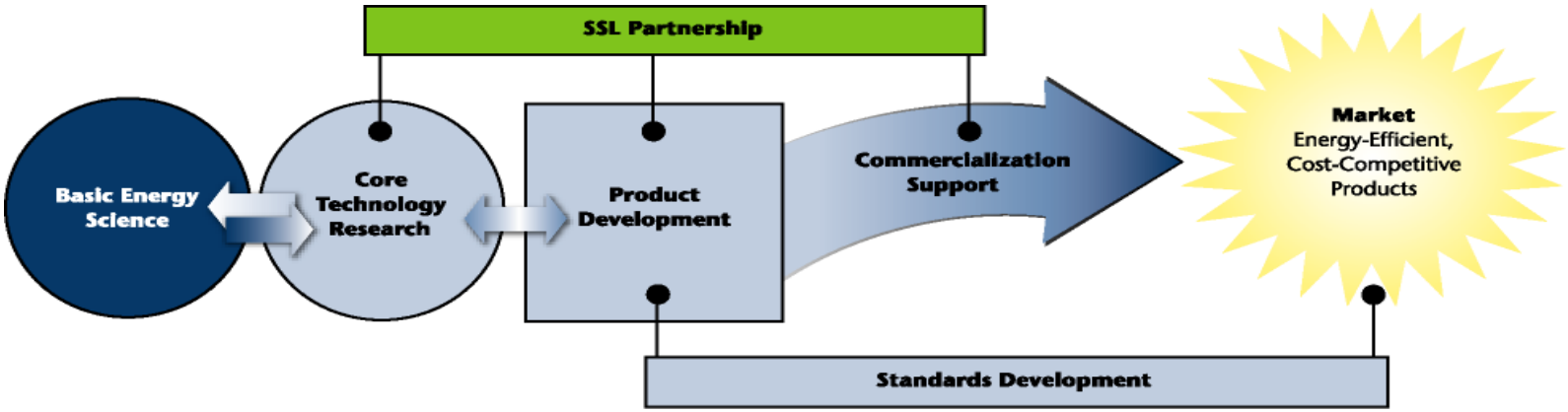
The Legislative Authority

Domenici-Barton Energy Policy Act of 2005

Section 912

"The Secretary shall carry out a Next Generation Lighting Initiative in accordance with this section to support research, development, demonstration, and commercial application activities related to advanced solid-state lighting technologies based on white light emitting diodes."

DOE Solid-State Lighting Program Strategy



Guiding technology advances from laboratory to marketplace

Key Partnerships Strengthen Program

- Next Generation Lighting Industry Alliance
  - Enhance manufacturing and commercialization focus
- Illuminating Engineering Society of North America
  - Collaborate on strong lighting standards
- International Association of Lighting Designers
  - Improve lighting quality and energy efficiency

NGLIA
NEXT GENERATION LIGHTING INDUSTRY ALLIANCE

IES Illuminating ENGINEERING SOCIETY

IALD

DOE SSL Pathways to Market

ENERGY STAR

lighting facts
SSL Quality Advocates

GATEWAY DEMONSTRATIONS

L PRIZE™

NEXT GENERATION LUMINAIRES

Retailer Energy Alliance

LIGHTING for tomorrow

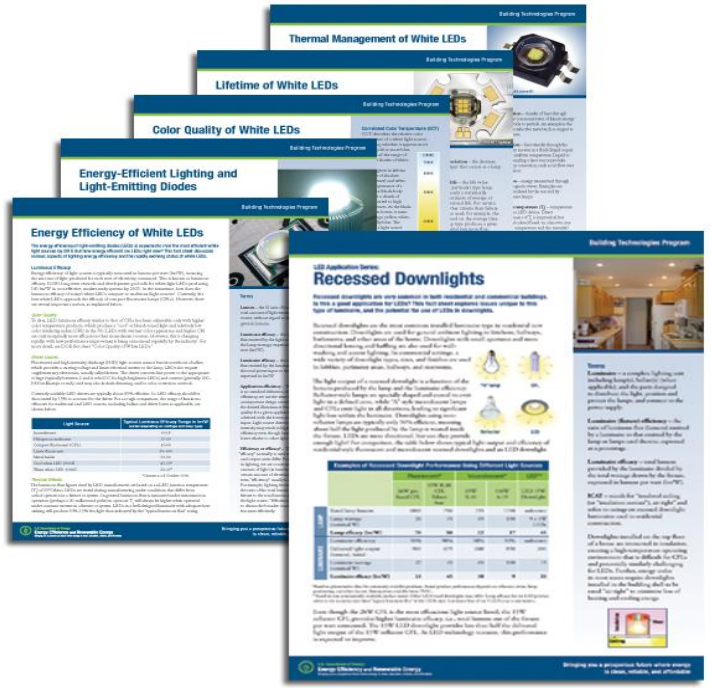
CALiPER

Technical Information Network

STANDARDS

SSL Technology Fact Sheet Series

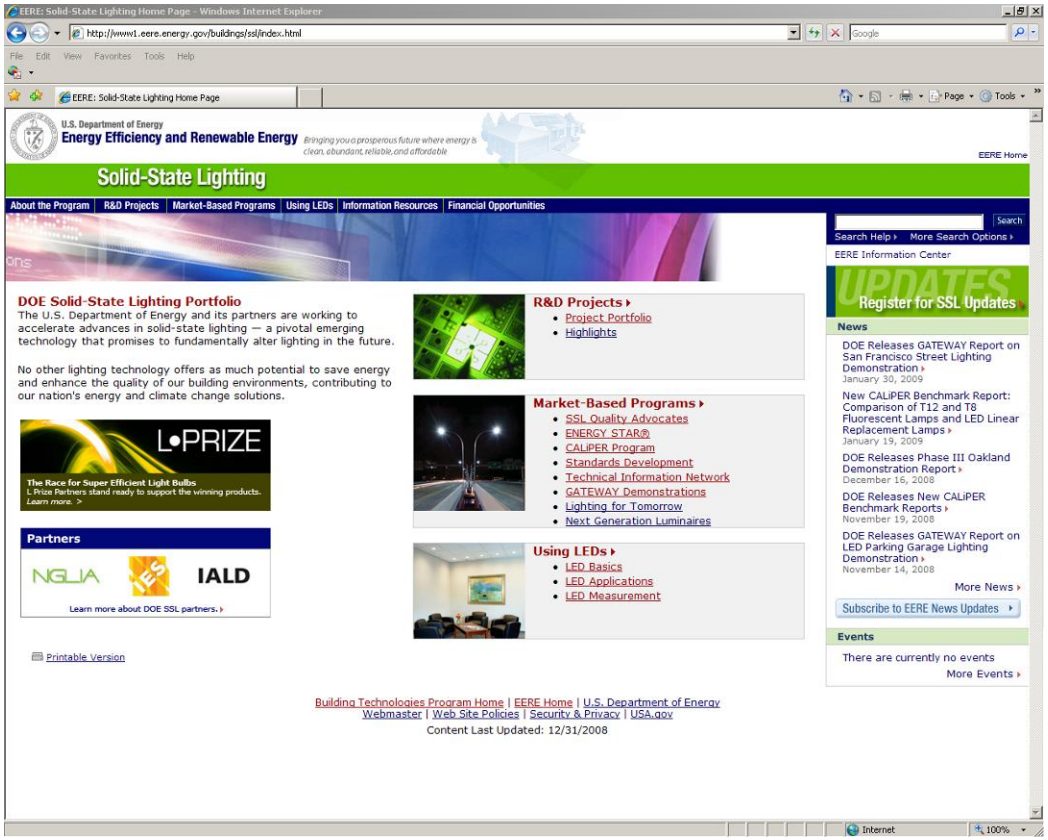
- 45,000 downloads in ’08
- LED Basics
  - Energy Efficiency
  - Thermal Management
  - Lifetime
  - Color Quality
  - Basics
- Application Series
  - Recessed Downlights
  - Undercabinet
  - Portable Desk/Task
  - Using LEDs
  - Dimming LEDs
  - Outdoor Lighting
- Measurement Series
  - SSL Standards
  - CRI and LEDs
  - Luminaire Efficacy
  - Luminaire Reliability



www.ssl.energy.gov/factsheets.html

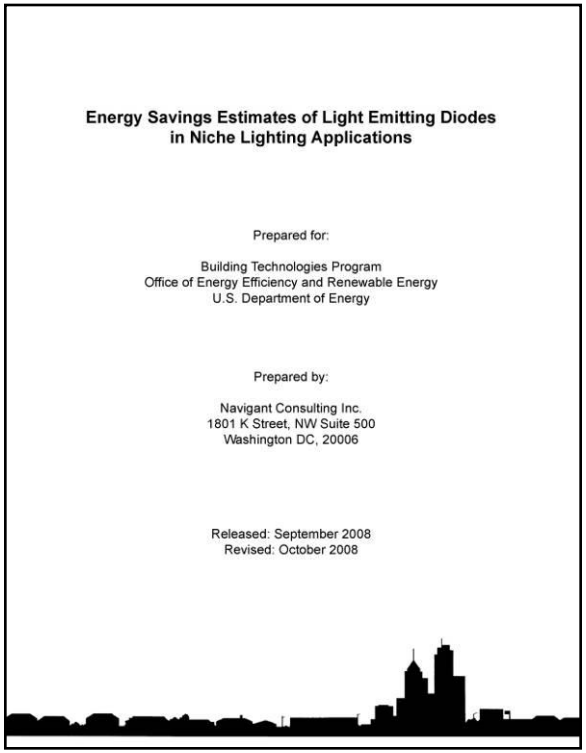
SSL Website

- Current information on SSL program, progress, and events
- SSL publications
  - Roadmaps
  - Reports
  - Technical fact sheets
- Solicitations
- Register for ongoing SSL Updates at *www.ssl.energy.gov*



Market Studies and Technical Evaluations

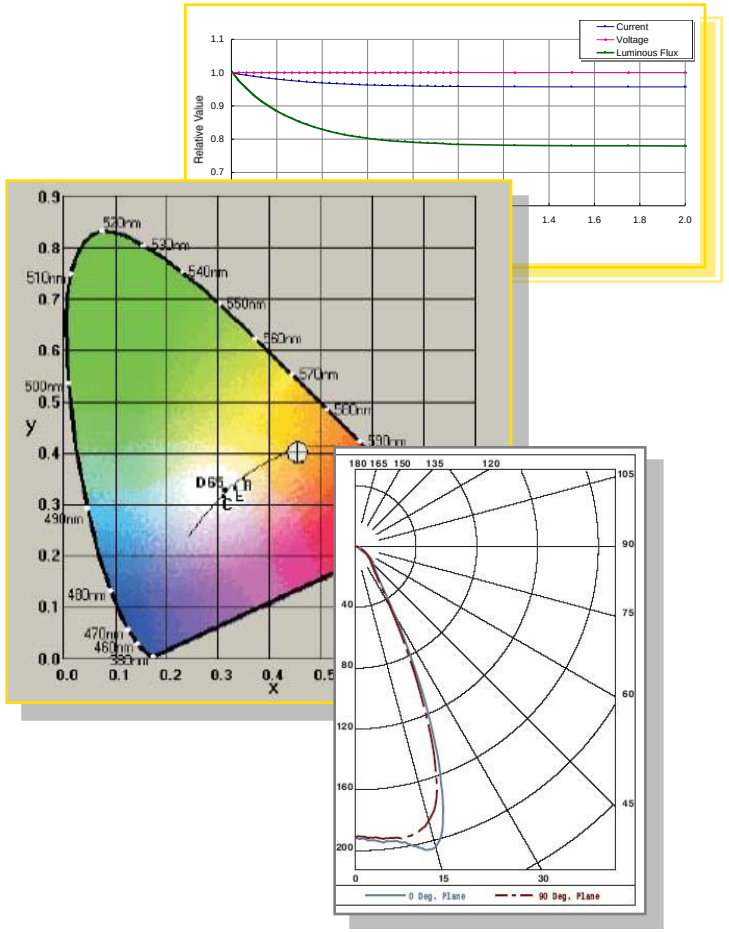
- New report: Analysis of niche markets
- Coming soon:
  - Life cycle environmental analysis of SSL
  - Studies of the cost-effectiveness of SSL for specific lighting applications
  - Extending CFL lessons learned study to SSL



http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/nichefinalreport_october2008.pdf

CALiPER Guides Planning & Fosters Developing Market

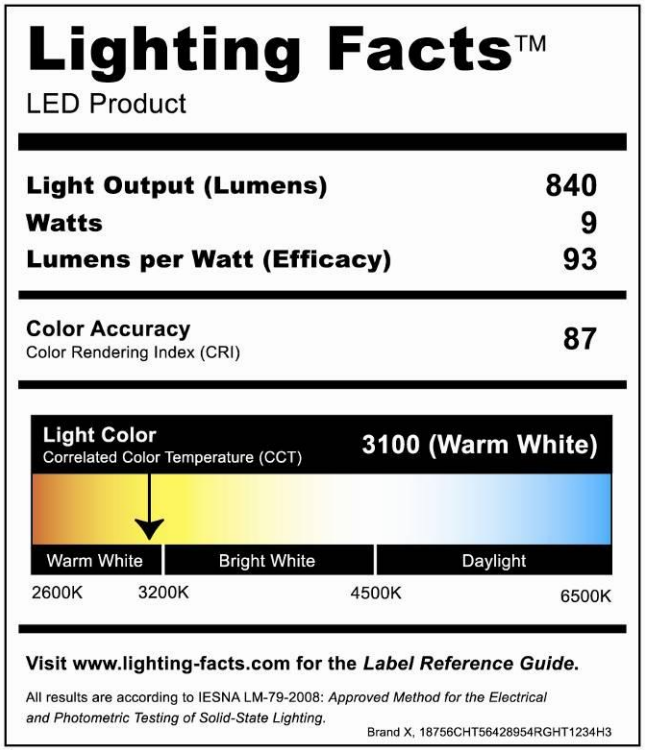
- CALiPER: Supports testing of wide array of SSL, benchmark, and demo products
- Rounds 1–7 completed
  - Includes undercabinet, step/wall, outdoor, task/desk lighting, downlights, replacement lamps
- Summary analysis, detailed test reports available



www.ssl.energy.gov/caliper.html

SSL Quality Advocates

- Goal: Assure and improve quality of SSL products
- Joint effort: DOE and NGLIA
- Product performance reporting initiative
- SSL Quality Advocates will:
  - Pledge to support objectives for SSL quality
  - Use Lighting Facts™ label, or ask for it
  - Continue to work on quality improvement



www.lightingfacts.com

Join the SSL Quality Advocates

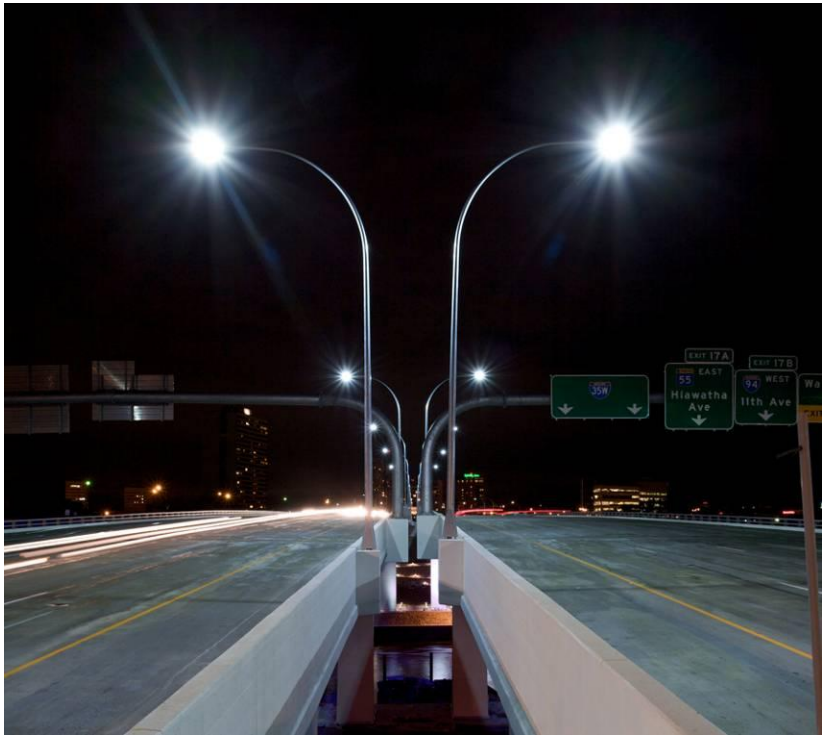
- Manufacturers, retailers, distributors, lighting designers, efficiency programs, utilities
- Sign up at *www.lightingfacts.com*

lighting facts
SSL Quality Advocates

MANUFACTURERS	BUYERS
Cree Inc.	Efficiency Vermont
CRS Electronics	Grainger Industrial Supply
io Lighting	Lightswitch Architectural
Lighting Sciences Group	Northeast Energy Efficiency Partnerships
LSI Industries	The Home Depot
Philips Color Kinetics	
Ruud Lighting	
Technical Consumer Products	

GATEWAY Demonstrations Showcase SSL Products in Real Applications

- I-35W Bridge, Minneapolis, MN: roadway lighting
- Green Homes, Lane County, OR: recessed downlights, undercabinet lighting
- Additional demonstrations under way
- Reports and Technology Briefs available



The three-year bridge demonstration project tests LED lighting in a challenging roadway environment.

www.ssl.energy.gov/gatewaydemos.html

Eugene, OR: Residential Lighting

- Downlights
  - 12 watts
  - Reduced energy use by 82% compared to incandescent
- Undercabinet lighting
  - 10 watts
  - Reduced energy use by 83% to 90% compared to halogen
- Report available

www.ssl.energy.gov/gatewaydemos_results.html

Oakland, CA: Street Lighting

- Phase III: Next-generation street lights
- Energy savings increased by 25% relative to Phase II
- Luminaire costs decreased by 34% between Phases II and III ($610 to $400)
- Report available

www.ssl.energy.gov/gatewaydemos_results.html

GATEWAY Demonstrations for Retailer Energy Alliance

- Goal: Provide tools to help retailers tackle energy challenges
- Parking lot lighting and other SSL demonstrations in planning stages
- Webcast on March 26: LED Site Lighting in Parking Lots

REA Steering Committee

- ASHRAE
- Best Buy
- Food Lion
- The Home Depot
- IES
- JCPenney
- Kohl's
- McDonald's
- Staples
- Target
- Walmart
- Whole Foods Market

www.eere.energy.gov/buildings/retailer

Lighting for Tomorrow: SSL Competition

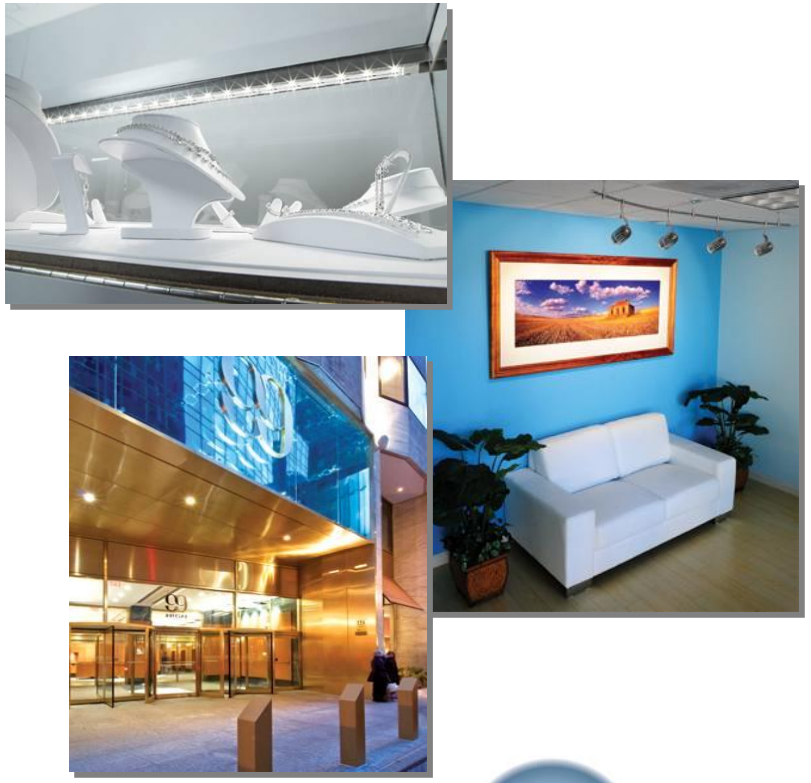
- Sponsored by DOE, ALA, CEE
- Focus on residential lighting
- 2008 winners:
  - Cree LED Lighting Solutions – LR4 recessed downlight
  - Kichler Lighting – Design Pro Series™ undercabinet system
  - Luximo – Cylindrium desk/task light

LIGHTING for tomorrow

www.lightingfortomorrow.com

Next Generation Luminaires™

- Sponsored by DOE, IALD, IES
- Focus on commercial LED luminaires
- 2009 Best in Class winners:
  - GE Lighting: Immersion™ jewelry case lighting
  - Journée Lighting: AZARA track mounted luminaires
  - Winona Lighting: STEP03 indoor/outdoor step lighting
- 22 market-ready products recognized



NEXT GENERATION LUMINAIRES

L Prize™

- Created by Energy Independence and Security Act (EISA 2007) Sec. 655
- Two key lamp replacements:
  - 60W Incandescent
  - PAR-38 Halogen
- Future focus
  - 21st Century Lamp
- Cash prizes, federal purchasing, utility programs
- Technology competition to spur innovation and exceptional performance

www.lightingprize.org

L Prize Competition Requirements

- Exceptional efficacy
- Long life
- Form factor identical to lamps they replace
- Additional details specified for
  - Quality
  - Performance
  - Mass manufacturing

Competition Requirements

60W Incandescent Replacement Lamp

- *More than 90 lm/W*
- *Less than 10 watts*
- *More than 900 lumens*
- *More than 25,000 hour life*
- *More than 90 CRI*
- *Between 2700–3000 K CCT*

PAR 38 Halogen Replacement Lamp

- *More than 123 lm/W*
- *Less than 11 watts*
- *More than 1,350 lumens*
- *More than 25,000 hour life*
- *More than 90 CRI*
- *Between 2700–3000 K CCT*

21st Century Lamp

- *To be defined in a future L Prize Program Announcement*

L Prize Winners Will Save Energy

L Prize 60 W incandescent replacement will use 10 watts.

Savings compared to:

- 60W incandescent – 83%
- 2014 EISA – 43W incandescent – 76%

L Prize PAR38 halogen replacement will use less than 11 watts.

Savings compared to:

- 90W PAR38 halogen – 87%
- 70W PAR38 halogen IR – 84%

Program Partners – Key to L Prize Success

- New technologies are expensive
  - Low volumes, high development costs
- Program partners represent significant demand
  - Drive sales up, prices down

The L Prize partners meet on a regular basis to discuss plans for field assessments of L Prize submissions and promotion of winning products.

L Prize Partners: 100 Million Potential "Fast-Track" Customers

West	Central	East
EnergyTrust of Oregon, Inc.	Ameren Illinois Utilities	Cape Light Compact
EWEB	ComEd An Exelon Company	Efficiency Vermont
NVEnergy	DTE Energy	nationalgrid The power of action.
PG&E Pacific Gas and Electric Company	MEEA Midwest Energy Efficiency Alliance	NSTAR
Platte River Power Authority The Energy We Live By	WECC wisconsin energy conservation corporation	Northeast Energy Efficiency Partnerships
PSE Puget Sound Energy The Energy To Do Great Things	SDGE A Sempra Energy utility	Progress Energy
SMUD Sacramento Municipal Utility District The Power To Do More.	Southern California Edison An Edison International Company	
Seattle City Light		

www.lightingprize.org/partners.stm

Learn More – Coming in 2009

- DOE SSL R&D Workshop
  - February 2009
- DOE SSL Manufacturing Workshop
  - April 2009
- DOE SSL Market Introduction Workshop
  - July 2009
- Find more information at
  - *www.ssl.energy.gov*

2009 Transformations in Lighting: Sixth Annual DOE SSL R&D Workshop

Voices for SSL Efficiency: 2008 Market Introduction Workshop